



## DEPARTMENT OF COMMERCE

### National Oceanic and Atmospheric Administration

[RTID 0648-XB068]

#### **Taking of Marine Mammals Incidental to Specific Activities; Taking of Marine Mammals Incidental to Pile Driving and Removal Activities during Construction of the Hoonah Marine Industrial Center Cargo Dock Project, Hoonah, Alaska**

**AGENCY:** National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

**ACTION:** Notice; issuance of an incidental harassment authorization.

**SUMMARY:** In accordance with the regulations implementing the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that NMFS has issued an incidental harassment authorization (IHA) to the City of Hoonah (City) to incidentally harass, by Level A and Level B harassment, marine mammals during pile driving activities associated with construction upgrades of a cargo dock at the city-owned Hoonah Marine Industrial Center (HMIC) in Port Frederick Inlet on Chichagof Island in Hoonah, Alaska.

**DATES:** This Authorization is effective for one year from issuance.

**FOR FURTHER INFORMATION CONTACT:** Stephanie Egger, Office of Protected Resources, NMFS, (301) 427-8401. Electronic copies of the application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: <https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act>. In case of problems accessing these documents, or for anyone who is unable to comment via electronic mail, please call the contact listed above.

#### **SUPPLEMENTARY INFORMATION:**

##### **Background**

The MMPA prohibits the “take” of marine mammals, with certain exceptions. Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq.*) direct the Secretary of Commerce (as delegated to NMFS) to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the taking is limited to harassment, a notice of a proposed incidental take authorization may be provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other “means of effecting the least practicable adverse impact” on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stocks for taking for certain subsistence uses (referred to in shorthand as “mitigation”); and requirements pertaining to the mitigation, monitoring and reporting of such takings are set forth. The definitions of all applicable MMPA statutory terms cited above are included in the relevant sections below.

### **Summary of Request**

On October 28, 2020 NMFS received a request from the City for an IHA to take marine mammals incidental to pile driving and removal during construction upgrades of a cargo dock at the HMIC in Port Frederick Inlet on Chichagof Island in Hoonah, Alaska. The application was deemed adequate and complete on February 2, 2021. The applicant’s request is for take of nine species of marine mammals by Level B harassment and five

species by Level A harassment. Neither the City nor NMFS expects serious injury or mortality to result from this activity and, therefore, an IHA is appropriate.

### **Description of Planned Activity**

The purpose of this project is to make upgrades to the HMIC. Upgrades to the site include the installation of three breasting dolphins, a sheet pile bulk cargo dock, fender piles, and a catwalk. The planned upgrades are needed to continue safely accommodating barges and other vessels delivering essential goods to the City. The planned project at the HMIC is located in Port Frederick Inlet, approximately 0.8 kilometers (km) (0.5 miles) northwest of downtown Hoonah 0.24 km (0.15 miles) east of the State of Alaska Ferry Terminal in Southeast Alaska.

The City is only accessible by air and water. Small amounts of cargo are transported into the community by plane; however, the majority is delivered weekly by barges from April through September (AML 2020). When weather permits, front load barges utilize a gravel landing located next to the existing City dock. The gravel landing provides a makeshift location to unload heavy cargo using a ramp and forklifts. During winter months, inclement weather events, and for more frequent deliveries, locals utilizes the Alaska Marine Highway System (AMHS) ferries and the local ferry terminal.

The purpose of HMIC cargo dock project is to make improvements to the existing gravel landing to enable barges to land during all conditions. The project is needed because the existing facility cannot provide consistent and safe berthing for barges. Once the project is completed, the City will be able to reliably receive goods year-round and in all weather conditions. Currently, Alaska Marine Line barges offers seasonal ramp barge service into the City; however, this project will allow for year-round, weekly deliveries by ocean going barges.

The project includes pile driving and removal over 110 working days (not necessarily consecutive) beginning in spring and extending through the summer of 2021

as needed. Approximately 50 days of vibratory and 28 days of impact hammering will occur. An additional 35 days of drilling/down-the-hole (DTH) will occur to stabilize the piles. The project would involve installing breasting dolphins, a solid fill sheet pile dock, and fender.

Construction of the three breasting dolphins would include:

- Installation of 10 temporary 30-inch (in) diameter steel piles as templates to guide proper installation of permanent piles (these piles would be removed prior to project completion); and
- Installation of 9 permanent 36-in diameter steel piles
  - Breasting Dolphin 1- (1) vertical 36-in steel pile and (2) 36-in batter steel piles
  - Breasting Dolphin 2 – (1) vertical 36-in steel pile and (2) 36-in batter steel pile
  - Breasting Dolphin 3 - (1) vertical 36-in steel pile and (2) 36-in batter steel pile

Construction of the bulk cargo dock would include (see Figure 4; Appendix A: Sheets 3-4 of the application):

- Installation of 20 temporary 30-in steel piles as templates to guide proper installation of permanent H-piles (these piles would be removed prior to project completion);
- Installation of 12 permanent H-piles to guide proper installation of sheets;
- Installation of 500 permanent sheet piles (130 linear feet); and
- Filling the area within sheet piles with 9,600 cubic yards of fill

Installation of the fender piles would include (see Figure 4; Appendix A: Sheet 3 of the application):

- Installation of 20 temporary 30-in steel piles as templates to guide proper installation of permanent fender piles (these piles would be removed prior to project completion);
- Installation of 6 permanent 20-in fender piles in front of sheet pile cargo dock

#### Construction Sequence

In-water construction of the HMIC cargo dock components is expected to occur via the following sequence:

- 1) Vibrate twenty 30-inch temporary piles to use as a guide to install H-piles for the cargo dock.
- 2) Vibrate and impact 12 H-piles to depth to hold the sheets into place.
- 3) Remove the temporary piles.
- 4) Using the H-piles as a guide, vibrate and impact 500 sheets into place to create a barrier prior to placing fill.
- 5) Using an excavator place 9,600 cubic yards of fill within the newly constructed cargo dock frame.

After the completion of the cargo dock, the barge will move over to install the six fender piles at the existing city dock face using the following sequence:

- 1) Vibrate 20 temporary 30-inch piles a minimum of ten feet into bedrock to create a template to guide installation of the permanent piles.
- 2) Weld a frame around the temporary piles.
- 3) Within the frame: vibrate, impact, and socket six permanent 20-inch fender piles into place.
- 4) Remove the frame and temporary piles.
- 5) Perform this sequence at the other six fender pile locations.

The three breasting dolphins will be constructed as the barge moves off shore and will install temporary and permanent piles as follows:

- 1) Vibrate 10 temporary 30-inch piles a minimum of ten feet into bedrock to create a template to guide installation of the permanent piles.
- 2) Weld a frame around the temporary piles.
- 3) Within the frame: vibrate, impact, and socket one vertical and two batter 36-inch pile into place.
- 4) Remove the frame and temporary piles.
- 5) Perform this sequence at the second and third location working farther from the shoreline.

Please see Table 1 below for the specific amount of time required to install and remove piles.

#### Installation and Removal of Temporary (Template) Piles

Temporary 30-in steel piles would be installed and removed using a vibratory hammer (Table 1).

#### Installation of Permanent Piles

The permanent H-piles, 20-in, and 36-in piles would be installed through sand and gravel with a vibratory hammer until advancement stops. Then, the pile will be driven to depth with an impact hammer. If design tip elevation is still not achieved, the contractor will utilize a drill to secure the pile. (Note: this DTH method can also be referred to as DTH drilling. It is referred to as DTH throughout this document.) Pile depths are expected to be approximately 12 m to 21 m (40 to 70 feet (ft)) below the mudline and estimated to take approximately 1.25-10.5 hours (hrs) per pile to complete.

The permanent sheets would be installed using a vibratory hammer and impact hammer following the same criteria as above to achieve design tip elevation (Table 1). It is expected that it will take around 20 minutes to install each sheet.

**Table 1--Pile driving and removal activities**

	Project Component					
	Temporary Pile Installation	Temporary Pile Removal	Permanent Pile Installation			
Vibratory Hammer						
Diameter of Steel Pile (inches)	30	30	36	H-piles	Sheets	20
# of Piles	50	50	9	12	500 (130lf)	6
Max # Piles Vibrated per Day	4	4	4	4	30 sheets	3
Vibratory Time per Pile (min)	15	15	15	15	15	15
Vibratory Time per Day (min)	60	60	60	60	450 (7.5 hr)	45
Number of Days	12.5	12.5	2.25	3	17	2
Vibratory Time Total	12 hrs 30 mins	12 hrs 30 mins	2 hr 15 mins	3 hrs	292 hrs	1 hr 30 min
Impact Hammer						
Diameter of Steel Pile (inches)	-	-	36	H-piles	Sheets	20
# of Piles	-	-	9	12	500 (130lf)	6
Max # Piles Impacted per Day	-	-	2	5	5 sheets	2
Impact Time per Pile (min)	-	-	15	5	5	5
Impact Time per Day (min)	-	-	30	20	25	10
Number of Days	-	-	4.5 day	3	17 days	3
Impact Time Total	-	-	2 hr 15 mins	1 hr	1 hr 30 mins	30 min
Drilling/DTH						
Diameter of Steel Pile (inches)	-	-	36	H-Piles	-	20
Total Quantity	-	-	9	12	-	6
Anchor Diameter	-	-	33	20	-	20
Max # Piles Anchored per Day	-	-	2	2	-	2
Time per Pile	-	-	5-10 hrs	3-4 hrs	-	1 hr
Actual Time Spent Driving per Pile	-	-	60 min	60 min	-	60 min
Time per Day	-	-	12 hrs (max)	12 hrs (max)	-	12 hrs (max)
Actual Time Spent Driving per Day	-	-	72 mins (1 hr 12 mins; max)	2 hrs (max)	-	1 hr (max)
Blows per pile	-	-	27,000-54,000	20,000	-	15,000
Number of Days	-	-	15 days	17 days	-	3 days
Drilling Total Time	-	-	45-90 hours	20 hours	-	4 hours

In addition to the activities described above, the planned action will involve other in-water construction and heavy machinery activities. Other types of in-water work including with heavy machinery will occur using standard barges, tug boats, and positioning piles on the substrate via a crane (*i.e.*, “stabbing the pile”).

A detailed description of the planned Hoonah Cargo Dock project is provided in the **Federal Register** notice for the proposed IHA (86 FR 12630; March 4, 2020).

### **Comments and Responses**

A notice of NMFS's proposal to issue an IHA to the City was published in the **Federal Register** on March 4, 2021 (86 FR 12630). That notice described, in detail, the City's activity, the marine mammal species that may be affected by the activity, and the anticipated effects on marine mammals. During the 30-day public comment period, NMFS received comments from Defenders of Wildlife (Defenders). The comment letter is available online at: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities>. Please the letter for full detail regarding the comments and rationale.

*Comment:* Defenders asserts NMFS has failed to demonstrate the authorized take numbers are small. Defenders requests that the agency lower the Level B harassment take for all species. The number of allotted takes for a project should not equate to the number of predicted maximum sightings of that species. According to Defenders, large take authorizations represent significant proportions of the stocks in and of themselves, and those takes can impact many more animals in the stock. The commenters state that large take numbers accounting for the maximum estimate of animals to be seen during the course of the project do not promote any mitigation or protection for marine mammals in the area.

*Response:* NMFS disagrees with the Defenders assessment that we failed to demonstrate authorized take numbers are small. As discussed in the **Small Numbers**



section of the proposed IHA and this final IHA, seven of the nine marine mammal stocks estimated total take are approximately 11 percent or less of the stock abundance. There are no official stock abundances for harbor porpoise and minke whales; however, as previously discussed in the notice of proposed IHA (86 FR 12630; March 4, 2020), for the abundance information that is available, the estimated takes are small percentages of the stock abundance. For harbor porpoise, the abundance for the Southeast Alaska stock is likely more represented by the aerial surveys that were conducted as these surveys had better coverage and were corrected for observer bias. Based on this data, the estimated take could potentially be approximately 4 percent of the stock abundance. For minke whales, in the northern part of their range they are believed to be migratory and so few minke whales have been seen during three offshore Gulf of Alaska surveys that a population estimate could not be determined. With only twelve estimated takes for this species, the percentage of take in relation to the stock abundance is likely to be very small. NMFS finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks. NMFS disagrees with the Defenders request to decrease the Level B harassment take for all species based on the calculations as Defenders asserted that the number of allotted takes for a project should not equate to the number of predicted maximum sightings of that species. In some of the estimated take calculations NMFS used a maximum number of species seen for its take calculations (*e.g.* Pacific white-sided dolphin). Using a maximum number of species seen is an acceptable way to estimate take and can be conservative when no density estimates are available. According to Defenders, large take authorizations represent significant proportions of the stocks in and of themselves, and those takes can impact many more animals in the stock. As discussed above NMFS made its small numbers determination based on the calculated take estimates compared to species abundance and all species were under NMFS' small

numbers threshold of one-third of the best available population abundance. See the **Small Numbers** section, alter in this document, for more information.

*Comment:* Defenders states NMFS has not demonstrated that impacts to the humpback whale DPSs will be negligible. Defenders states that NMFS must better explain how it reaches its conclusion and, as discussed below, how it is effecting the least practicable adverse impact on humpback whales DPSs.

*Response:* A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.*, population-level effects). In addition to considering estimates of the number of marine mammals that might be “taken” through harassment, NMFS considers other factors, such as the likely nature of any responses (*e.g.*, intensity, duration), the context of any responses (*e.g.*, critical reproductive time or location, migration), as well as effects on habitat, and the likely effectiveness of the mitigation. NMFS disagrees with much of what the Commenter asserts. First, we have carefully explained our interpretation of the least practicable adverse impact standard and how it applies to both stocks and individuals, in the **Mitigation Measures** section. Further, we have applied the standard correctly in this IHA in requiring measures that reduce impacts to individual marine mammals in a manner that reduces the probability and/or severity of population-level impacts. Specifically for humpback whales, for the effectiveness of mitigation, the shutdown zones are larger than the Level A harassment zones which, in combination with the fact that the zones are so small to begin with, is expected to avoid the likelihood of Level A harassment for all humpback whales. Regarding behavioral disturbance from pile driving activities, exposures to elevated sound levels produced during pile driving activities may cause behavioral responses by an animal, but they are expected to be mild and temporary. Any reactions and behavioral changes for humpback whales are expected to subside quickly when the exposures cease and are unlikely to have any effects on individual

fitness, let alone population effects. For effects on habitat, as previously discussed in the notice of proposed IHA, the HMIC Cargo Dock project would likely not impact any marine mammal habitat since its proposed location is within an area that is currently used by large shipping vessels and in between two existing, heavily-traveled docks, and within an active marine commercial and tourist area. In addition, impacts to marine mammal prey species are expected to be minor and temporary. The abundance of humpbacks in Port Frederick changes seasonally with the availability of prey. Humpbacks are generally present in large numbers from late fall-early winter through mid- to late spring, but are infrequent to uncommon during the mid-summer months when herring are absent. The project should be completed mostly, if not all, during the spring and some into the summer months.

*Comment:* Defenders claims that NMFS must more accurately define “group size” for humpback whales, and states that NMFS defines a maximum humpback group size as eight individuals for all months of the year, but cites no support for that maximum group size. The commenter goes on to suggest that NMFS must state how the agency is defining this term for the purpose of mitigating harm caused by this project. Additionally, Defenders states that regardless of how “group” is defined, humpback group size in Southeast Alaska varies dramatically throughout the year depending on prey availability and social group dynamics.

*Response:* The largest group of 8 humpback whales was observed most often in the previous Hoonah observer reports submitted to NMFS as part of the 2016 and 2019 Hoonah Berth cruise ship terminal projects (reports can be found here: <https://www.fisheries.noaa.gov/action/incidental-take-authorization-pile-driving-and-removal-activities-during-construction-cruise>). On occasion, higher numbers have been reported for humpback whales during the prior Hoonah projects; however, those generally occurred late summer into the fall. For example, on 3 days there were slightly

higher numbers of 13 whales observed (July and October 2019). The abundance of humpbacks in Port Frederick changes seasonally with the availability of prey and are not as common in larger numbers during the mid-summer months when herring are absent. Because the project will occur during the spring and extend into the summer months, NMFS believes it was appropriate to use the largest group of whales that were generally seen during this time period for its calculated take estimation during the proposed IHA and for this final IHA.

*Comment:* Defenders agrees with NMFS requiring PSOs for this project and for other nearshore marine construction projects as a mitigation measure in addition to appropriate time and space restrictions. However, Defenders encourages NMFS to provide formal PSO monitoring guidelines and requirements for reporting takes. In addition to NMFS requiring PSOs to report marine mammal sighting estimates as “min/max/best,” NMFS should require these estimates to be documented in the final publicly available report.

*Response:* NMFS does provide formal requirements for the PSOs to report during monitoring of the project. These are clearly described in the **Monitoring and Reporting** sections in the proposed and final **Federal Register** notice for these actions as well as in the actual IHA. The reporting, inclusive of estimated number of animals (min/max/best), are already required in the final publically available reports that NMFS posts to the website for every construction project at <https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities#active-authorizations>.

*Comment:* Defenders states that NMFS should require an additional PSO for easily photo identifiable species. Defenders encourages NMFS to mandate an additional PSO who is solely dedicated to photo-identification work. Defenders encourages NMFS to incorporate photo identification work into protected species observing primarily

because this will allow PSOs to more reliably determine if individual animals are exposed to multiple takes, even if PSOs do not or cannot successfully match an individual in known identification catalogs.

*Response:* NMFS thanks Defenders for their comment on requiring PSO's to incorporate photo identification work into their monitoring requirements. Should the PSOs for this project submit any photos of easily identifiable species, such as humpback whales, as part of their final report, NMFS will share these with the appropriate individuals in the agency, scientists, and other managers for possible identification. However, NMFS does not agree that it is necessary to assign a PSO solely to conduct photo-identification work and does not agree with the recommendation.

*Comment:* Defenders states NMFS must discuss effects of multiple takes to individual humpback whales as they could be the same individual humpback whales exposed to multiple Level B harassment takes. The commenter states that it is inappropriate to assume that if a whale is displaced from its preferred site, then it will find the same success in another area. For these reasons, Defenders states that NMFS must address the impacts of cumulative Level B harassment takes being concentrated on the same individual whales, both to those whales and to the stock as a whole.

*Response:* NMFS acknowledges that an individual may be taken on more than one day. However, as discussed in the **Negligible Impact Analysis and Determination** section, the authorized take is not expected to affect the reproductive success or survivorship of any individual marine mammal, particularly humpback whales. Given the lack of any impacts on the reproduction or survival of any affected individuals, there will be no effects on any species' annual rates of recruitment or survival in that year, and therefore no basis to suggest that impacts would accrue in a manner that would have a non-negligible impact on an affected species. During monitoring of the Hoonah Berth II cruise ship terminal project, zero humpback whales were sighted in June 2019. In July

2019, sightings were of a single individual, a pair, and a group of five humpback whales exhibiting traveling, diving, and foraging behaviors for a total of 23 humpback whales that were taken by Level B harassment over 16 days of in-water work. In August of 2019, there were 15 takes by Level B harassment over 8 days of in-water work and consisted of a single individual, a pair, and a group of four humpback whales exhibiting breaching, slapping, swimming, milling, traveling, diving, and foraging behaviors. Based on this observational data of low numbers of animals from June through August, even if some animals were repeated takes it would not be at a level that would impact the reproduction or survival of any affected individuals, let alone a species or stock.

*Comment:* Defenders states that NMFS should require temporal restrictions based around humpback whale bubble net feeding, based on the commenter's interpretation that the pile driving activity may disrupt bubble net feeding. The commenter notes the importance of this type of feeding activity.

*Response:* Humpback whales are relatively generalized in their feeding compared to some other baleen whales. In the Northern Hemisphere, known prey includes: euphausiids (krill); copepods; juvenile salmonids; herring; Arctic cod; walleye pollock; pteropods; and cephalopods (Johnson and Wolman 1984, Perry *et al.* 1999, Straley *et al.* 2018).

According to the Biologically Important Areas dataset (Ferguson *et al.* 2015), the ensonified area and surrounding waters are important feeding habitat for humpback whales throughout the spring, summer, and fall. Feeding habitat from March through May exists just outside Port Frederick and thus outside the ensonified area, but is present in the vessel transit portion of the action area. From June through August, important areas for humpback whales include most of Port Frederick and the ensonified area. In the fall from September through November, important feeding habitat for humpback whales shifts along the eastern side of Port Frederick. There is no information to suggest that

there would be sufficient impacts to feeding humpback whales, particularly during bubble netting, to indicate that the mitigation measure recommended by the commenter is warranted.

Humpback whales produce sounds less frequently in their summer feeding areas. Feeding groups produce distinctive sounds ranging from 20 hertz (Hz) to 2 kilohertz (kHz), with median durations of 0.2-0.8 seconds and source levels of 175-192 decibel (dB) (Thompson *et al.* 1986). These sounds are attractive and appear to rally animals to the feeding activity (D'Vincent *et al.* 1985, Sharpe and Dill 1997). The project will occur in an industrialized harbor, where vessel sounds and dock activity occurs frequently. We expect any additional contributions to masking from project activities would be very small and of short duration relative to the existing conditions and would not impact humpback whales that are bubble feeding. The short duration and limited affected area project-related noise will likely result in an insignificant amount of masking. Any masking that could possibly rise to Level B harassment would occur concurrently within the zones of behavioral harassment already estimated for vibratory pile driving, and which have already been taken into account in the analysis.

*Comment:* Defenders states that NMFS must include updated best available science regarding marine mammal noise criteria NMFS, citing Southall *et al.*, 2019 as recommending separation of baleen whale hearing groups into multiple categories for the purpose of assessing likely noise impacts. The commenter further asserts that consideration of Southall *et al.*, 2019 would require NMFS to reevaluate the shut down zone sizes, especially for baleen whales.

*Response:* Thus far, no new information has been published or otherwise conveyed that would fundamentally change the assessment of impacts or conclusions of this IHA regarding current weighting functions and permanent threshold shift (PTS) and temporary threshold shift (TTS) thresholds and therefore calculated isopleths.

Furthermore, the recent peer-reviewed updated marine mammal noise exposure criteria by Southall *et al.* (2019) provide identical PTS and TTS thresholds to those provided in NMFS' Acoustic Technical Guidance. NMFS acknowledges Southall *et al.* (2019)'s discussion of potential revised organization for hearing groups. However, the authors do not provide any new weighting functions or thresholds. Therefore, there is no new information available that would change the calculated shutdown zones for any marine mammals, including mysticetes. NMFS' Revised Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (NMFS 2018) (Acoustic Technical Guidance), which was used in the assessment of effects for this IHA, compiled, interpreted, and synthesized the best available scientific information for noise-induced hearing effects for marine mammals to derive updated thresholds for assessing the impacts of noise on marine mammal hearing, including the articles that Defenders referenced that were published subsequent to the publication of the first version of the Acoustic Technical Guidance in 2016. The new data included in those articles are consistent with the thresholds and weighting functions included in the current version of the Acoustic Technical Guidance (NMFS, 2018). NMFS will continue to review and evaluate new relevant data as it becomes available and consider the impacts of those studies on the Acoustic Technical Guidance to determine what revisions/updates may be appropriate.

*Comment:* Defenders states that NMFS should assess the available sound propagation reduction technologies and that it is unclear from the proposal what the range of available technologies and strategies is to mitigate noise and other project impacts – *i.e.*, to effect the least practicable impacts on marine mammals. Defenders also states that NMFS must address the technologies and approaches available to minimize project impacts on marine mammals and state how it is ensuring that those impacts are minimized, specifically expressing an interest in bubble curtains.



*Response:* NMFS has assessed the available sound propagation reduction technologies, as recommended by the commenter. However, as discussed in greater detail in the **Potential Effects of Specified Activities on Marine Mammals and their Habitat** section of the notice of proposed IHA, and in the **Negligible Impact Analysis and Determination** section of this notice, only temporary, minor impacts on individual marine mammals are anticipated. Therefore, NMFS has determined that the expected effects of the action do not warrant the significant additional expense associated with a requirement to use, for example, bubble curtains. The use of bubble curtains is also likely to extend the overall duration of the project. As a result, while the use of bubble curtains may reduce the intensity of a given take event on an individual, it may result in increased take events overall and in a longer duration of effect to marine mammal habitat in general.

*Comment:* Defenders states that if the first phase of this project is satisfactorily completed with the inclusion of the recommended mitigations and corrections and minimal Level B harassment take of marine mammals, Defenders supports the City receiving renewal for the continuation of the dock construction.

*Response:* NMFS appreciates Defenders feedback on a possible renewal in the future for this work.

### **Changes from the Proposed IHA to Final IHA**

For the purposes of our ESA Section 7 consultation, NMFS made a slight change in the way we describe the number of ESA-listed Mexico Distinct Population Segment (DPS) humpback whales and the Western DPS (WDPS) Steller sea lions in the **Estimated Take** section. This does not change our authorized number of total estimated take of humpback whales (880 humpback whales) from the Central North Pacific stock or the total estimated take of Steller sea lions (550). For the Mexico DPS of humpback whales, there was a slight error in the proportion used (0.0601) in the proposed IHA, now

changed in this final IHA (0.061), multiplied by the total estimated take (880 humpback whales) increased the probable take of Mexico DPS from 53 to 54 whales. Again, this is used to describe how many ESA-listed species would likely be taken for ESA Section 7 consultation purposes, and does not change the total take estimate authorized for this IHA for the Central North Pacific stock of humpback whales. For Steller sea lions, NMFS is now using an updated estimate from Hastings *et al.* 2020 to describe the proportion of Western DPS Steller sea lions that may be found in the area. In the proposed IHA, NMFS assumed 39 sea lions would be anticipated from the Western DPS (0.0702 proportion of the total animals (L. Jemison draft unpublished Steller sea lion data, 2019) and taken by Level B harassment. In this final IHA, NMFS assumes that the percentage of Steller sea lions which may be found in the action area from the WDPS is now estimated at 0.014 proportion of the total animals (Hastings *et al.* 2020). Therefore, NMFS expects that 8 individual WDPS Steller sea lions may be exposed to Level B harassment ( $550 \times 0.014 = 7.7$  (rounded up to 8)). Because there are now fewer WDPS Steller sea lions estimated to be taken for Level B harassment, this slightly increased the proportion of Eastern DPS Steller sea lions that would likely be taken from 511 to 542 sea lions. These revised numbers do not change the authorized total estimated take (550) of Steller sea lions through the IHA.

### **Description of Marine Mammals in the Area of Specified Activities**

Sections 3 and 4 of the application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history, of the potentially affected species. Additional information regarding population trends and threats may be found in NMFS's Stock Assessment Reports (SARs; <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports>) and more general information about these species (*e.g.*,

physical and behavioral descriptions) may be found on NMFS's website

(<https://www.fisheries.noaa.gov/find-species>).

Table 2 lists all species with expected potential for occurrence in the project area and summarizes information related to the population or stock, including regulatory status under the MMPA and ESA and potential biological removal (PBR), where known. For taxonomy, we follow Committee on Taxonomy (2020). PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (as described in NMFS' SARs). While no mortality is anticipated or authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS's stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known, that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS's U.S. Pacific and Alaska SARs (Carretta *et al.*, 2020; Muto *et al.*, 2020). All MMPA stock information presented in Table 2 is the most recent available at the time of publication and is available in the 2019 SARs (Carretta *et al.*, 2020; Muto *et al.*, 2020) and draft 2020 SARs (available online at: [www.fisheries.noaa.gov/national/marine-mammal-protection/draft-marine-mammal-stock-assessment-reports](https://www.fisheries.noaa.gov/national/marine-mammal-protection/draft-marine-mammal-stock-assessment-reports)).

#### **Table 2--Marine Mammal Occurrence in the Project Area**

Common name	Scientific name	Stock	ESA/MMPA status; Strategic (Y/N) <sup>1</sup>	Stock abundance (CV, N <sub>min</sub> , most recent abundance survey) <sup>2</sup>	PBR	Annual M/SI <sup>3</sup>
Order Cetartiodactyla – Cetacea – Superfamily Mysticeti (baleen whales)						
Family Eschrichtiidae						
Gray Whale	<i>Eschrichtius robustus</i>	Eastern N Pacific	-, -, N	26,960 (0.05, 25,849, 2016)	801	131
Family Balaenopteridae (rorquals)						
Minke Whale	<i>Balaenoptera acutorostrata</i>	Alaska	-, -, N	N/A (see SAR, N/A, see SAR)	UND	0
Humpback Whale	<i>Megaptera novaeangliae</i>	Central N Pacific (Hawaii and Mexico DPS)	-, -, Y	10,103 (0.3, 7,891, 2006)	83	26
Superfamily Odontoceti (toothed whales, dolphins, and porpoises)						
Family Delphinidae						
Killer Whale	<i>Orcinus orca</i>	Alaska Resident	-, -, N	2,347 (N/A, 2347, 2012)	24	1
		Northern Resident	-, -, N	302 (N/A, 302, 2018)	2.2	0.2
		West Coast Transient	-, -, N	349 (na/349; 2018)	3.5	0.4
Pacific White-Sided Dolphin	<i>Lagenorhynchus obliquidens</i>	N Pacific	-, -, N	26,880 (N/A, N/A, 1990)	UND	0
Family Phocoenidae (porpoises)						
Dall's Porpoise	<i>Phocoenoides dalli</i>	AK	-, -, N	83,400 (0.097, N/A, 1991)	UND	38
Harbor Porpoise	<i>Phocoena phocoena</i>	Southeast Alaska	-, -, Y	see SAR (see SAR, see SAR, 2012)	see SAR	34
Order Carnivora – Superfamily Pinnipedia						
Family Otariidae (eared seals and sea lions)						
Steller Sea Lion	<i>Eumetopias jubatus</i>	Western DPS	E, D, Y	52,932 (see SAR, 52,932, 2019)	318	255
		Eastern DPS	T, D, Y	43,201 a (see SAR, 43,201, 2017)	2592	112
Family Phocidae (earless seals)						
Harbor Seal	<i>Phoca vitulina</i>	Glacier Bay/Icy Strait	-, -, N	7,455 (see SAR, 6,680, 2017)	120	104

<sup>1</sup> - Endangered Species Act (ESA) status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.

<sup>2</sup> - NMFS marine mammal stock assessment reports online at: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments>. CV is coefficient of variation; N<sub>min</sub> is the minimum estimate of stock abundance.

<sup>3</sup> - These values, found in NMFS's SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (e.g., commercial fisheries, ship strike). Annual M/SI often cannot be determined precisely and is in some cases presented as a minimum value or range. A CV associated with estimated mortality due to commercial fisheries is presented in some cases.

A detailed description of the of the species likely to be affected by the City's project, including brief introductions to the species and relevant stocks as well as available information regarding population trends and threats, and information regarding local occurrence, were provided in the **Federal Register** notice for the proposed IHA (86 FR 12630; March 4, 2020) since that time, we are not aware of any changes in the status of these species and stocks; therefore, detailed descriptions are not provided here. Please refer to that **Federal Register** notice for these descriptions. Please also refer to NMFS' website (<https://www.fisheries.noaa.gov/find-species>) for generalized species accounts.

### **Potential Effects of Specified Activities on Marine Mammals and their Habitat**

Acoustic effects on marine mammals during the specified activity can occur from vibratory and impact pile driving as well as DTH. The effects of underwater noise from the City's planned activities have the potential to result in Level A and B harassment of marine mammals in the vicinity of the action area. The effects of pile driving on marine mammals are dependent on several factors, including the size, type, and depth of the animal; the depth, intensity, and duration of the pile driving sound; the depth of the water column; the substrate of the habitat; the standoff distance between the pile and the animal; and the sound propagation properties of the environment. With both types, it is likely that the pile driving could result in temporary, short term changes in an animal's typical behavioral patterns and/or avoidance of the affected area. The **Federal Register** notice for the proposed IHA (86 FR 12630; March 4, 2020) included a discussion of the effects of anthropogenic noise on marine mammals, therefore that information is not repeated here; please refer to the **Federal Register** notice (86 FR 12630; March 4, 2020).

#### *Anticipated Effects on Marine Mammal Habitat*

The main impact issue associated with the planned activity would be temporarily elevated sound levels and the associated direct effects on marine mammals. The most likely impact to marine mammal habitat occurs from pile driving effects on likely marine

mammal prey (*i.e.*, fish) near where the piles are installed. Impacts to the immediate substrate during installation and removal of piles are anticipated, but these would be limited to minor, temporary suspension of sediments, which could impact water quality and visibility for a short amount of time, but which would not be expected to have any effects on individual marine mammals. Impacts to substrate are therefore not discussed further. These potential effects are discussed in detail in the **Federal Register** notice for the proposed IHA (84 FR 18495; May 1, 2019), therefore that information is not repeated here; please refer to that **Federal Register** notice for that information.

### **Estimated Take**

This section provides an estimate of the number of incidental takes authorized through this IHA, which will inform both NMFS' consideration of "small numbers" and the negligible impact determination.

Except with respect to certain activities not pertinent here, section 3(18) of the MMPA defines "harassment" as any act of pursuit, torment, or annoyance, which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

Take of marine mammals incidental to the City's pile driving and removal activities (as well as during DTH) could occur as a result of Level A and Level B harassment. Below we describe how the potential take is estimated. As described previously, no mortality is anticipated or authorized for this activity. Below we describe how the take is estimated.

Generally speaking, we estimate take by considering: (1) acoustic thresholds above which NMFS believes the best available science indicates marine mammals will be behaviorally harassed or incur some degree of permanent hearing impairment; (2) the

area or volume of water that will be ensonified above these levels in a day; (3) the density or occurrence of marine mammals within these ensonified areas; and, (4) and the number of days of activities. We note that while these basic factors can contribute to a basic calculation to provide an initial prediction of takes, additional information that can qualitatively inform take estimates is also sometimes available (*e.g.*, previous monitoring results or average group size). Below, we describe the factors considered here in more detail and present the planned take estimate.

#### *Acoustic Thresholds*

Using the best available science, NMFS has developed acoustic thresholds that identify the received level of underwater sound above which exposed marine mammals would be reasonably expected to be behaviorally harassed (equated to Level B harassment) or to incur PTS of some degree (equated to Level A harassment).

*Level B Harassment* – Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source (*e.g.*, frequency, predictability, duty cycle), the environment (*e.g.*, bathymetry), and the receiving animals (hearing, motivation, experience, demography, behavioral context) and can be difficult to predict (Southall *et al.*, 2007, Ellison *et al.*, 2012). Based on what the available science indicates and the practical need to use a threshold based on a factor that is both predictable and measurable for most activities, NMFS uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS predicts that marine mammals are likely to be behaviorally harassed in a manner we consider Level B harassment when exposed to underwater anthropogenic noise above received levels of 120 dB reference pressure 1  $\mu$ Pascal (re 1  $\mu$ Pa) root-mean-square (rms) for continuous (*e.g.*, vibratory pile driving) and above 160 dB re 1  $\mu$ Pa (rms) for intermittent sources (*e.g.*, impact pile driving). The City's planned activity includes the use of continuous (vibratory pile

driving) and impulsive (impact pile driving) sources, and therefore the 120 and 160 dB re 1  $\mu$ Pa (rms) are applicable. DTH noise is considered to produce noise with both impulsive and continuous characteristics. Therefore, DTH is considered to be a continuous noise source for purposes of evaluating potential Level B harassment, resulting in a conservative approach to the analysis.

*Level A harassment* - NMFS' Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0) (Technical Guidance, 2018) identifies dual criteria to assess auditory injury (Level A harassment) to five different marine mammal groups (based on hearing sensitivity) as a result of exposure to noise. The technical guidance identifies the received levels, or thresholds, above which individual marine mammals are predicted to experience changes in their hearing sensitivity for all underwater anthropogenic sound sources, and reflects the best available science on the potential for noise to affect auditory sensitivity by:

- Dividing sound sources into two groups (*i.e.*, impulsive and non-impulsive) based on their potential to affect hearing sensitivity;
- Choosing metrics that best address the impacts of noise on hearing sensitivity, *i.e.*, sound pressure level (peak SPL) and sound exposure level (SEL) (also accounts for duration of exposure); and
- Dividing marine mammals into hearing groups and developing auditory weighting functions based on the science supporting that not all marine mammals hear and use sound in the same manner.

These thresholds were developed by compiling and synthesizing the best available science, and are provided in Table 4 below. The references, analysis, and methodology used in the development of the thresholds are described in NMFS 2018 Technical Guidance, which may be accessed at <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance>.



The City's planned activities includes the use of continuous non-impulsive (vibratory pile driving) and impulsive (impact pile driving) sources. DTH pile installation includes drilling (non-impulsive sound) and hammering (impulsive sound) to penetrate rocky substrates (Denes *et al.* 2016; Denes *et al.* 2019; Reyff and Heyvaert 2019). DTH pile installation was initially thought be a primarily non-impulsive noise source. However, Denes *et al.* (2019) concluded from a study conducted in Virginia, nearby the location for this project, that DTH should be characterized as impulsive based on Southall *et al.* (2007), who stated that signals with a >3 dB difference in sound pressure level in a 0.035-second window compared to a 1-second window can be considered impulsive. Therefore, DTH pile installation is treated as both an impulsive and non-impulsive noise source. In order to evaluate Level A harassment, DTH pile installation activities are evaluated according to the impulsive criteria. Overall, the approach to analysis of the DTH installation technique ensures that the largest ranges to effect for both Level A and Level B harassment are accounted for in the take estimation process.

**Table 4--Thresholds identifying the onset of Permanent Threshold Shift (Auditory Injury)**

	PTS Onset Acoustic Thresholds* (Received Level)	
Hearing Group	Impulsive	Non-impulsive
Low-Frequency (LF) Cetaceans	<i>Cell 1</i> $L_{pk,flat}$ : 219 dB $L_{E,LF,24h}$ : 183 dB	<i>Cell 2</i> $L_{E,LF,24h}$ : 199 dB
Mid-Frequency (MF) Cetaceans	<i>Cell 3</i> $L_{pk,flat}$ : 230 dB $L_{E,MF,24h}$ : 185 dB	<i>Cell 4</i> $L_{E,MF,24h}$ : 198 dB
High-Frequency (HF) Cetaceans	<i>Cell 5</i> $L_{pk,flat}$ : 202 dB $L_{E,HF,24h}$ : 155 dB	<i>Cell 6</i> $L_{E,HF,24h}$ : 173 dB
Phocid Pinnipeds (PW) (Underwater)	<i>Cell 7</i> $L_{pk,flat}$ : 218 dB $L_{E,PW,24h}$ : 185 dB	<i>Cell 8</i> $L_{E,PW,24h}$ : 201 dB
Otariid Pinnipeds (OW) (Underwater)	<i>Cell 9</i> $L_{pk,flat}$ : 232 dB	<i>Cell 10</i> $L_{E,OW,24h}$ : 219 dB

	$L_{E,OW,24h}$ : 203 dB	
<p>* Dual metric acoustic thresholds for impulsive sounds: Use whichever results in the largest isopleth for calculating PTS onset. If a non-impulsive sound has the potential of exceeding the peak sound pressure level thresholds associated with impulsive sounds, these thresholds should also be considered.</p> <p><u>Note:</u> Peak sound pressure (<math>L_{pk}</math>) has a reference value of 1 <math>\mu</math>Pa, and cumulative sound exposure level (<math>L_E</math>) has a reference value of 1 <math>\mu</math>Pa<sup>2</sup>s. In this Table, thresholds are abbreviated to reflect American National Standards Institute standards (ANSI 2013). However, peak sound pressure is defined by ANSI as incorporating frequency weighting, which is not the intent for this Technical Guidance. Hence, the subscript “flat” is being included to indicate peak sound pressure should be flat weighted or unweighted within the generalized hearing range. The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (LF, MF, and HF cetaceans, and PW and OW pinnipeds) and that the recommended accumulation period is 24 hours. The cumulative sound exposure level thresholds could be exceeded in a multitude of ways (i.e., varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these acoustic thresholds will be exceeded.</p>		

### *Ensonified Area*

Here, we describe operational and environmental parameters of the activity that will feed into identifying the area ensonified above the acoustic thresholds, which include source levels and transmission loss coefficient.

### Sound Propagation

Transmission loss (TL) is the decrease in acoustic intensity as an acoustic pressure wave propagates out from a source. TL parameters vary with frequency, temperature, sea conditions, current, source and receiver depth, water depth, water chemistry, and bottom composition and topography. The general formula for underwater TL is:

$$TL = B * \log_{10}(R_1/R_2), \text{ where}$$

$B$  = transmission loss coefficient (assumed to be 15)

$R_1$  = the distance of the modeled SPL from the driven pile, and

$R_2$  = the distance from the driven pile of the initial measurement.

This formula neglects loss due to scattering and absorption, which is assumed to be zero here. The degree to which underwater sound propagates away from a sound source is dependent on a variety of factors, most notably the water bathymetry and presence or absence of reflective or absorptive conditions including in-water structures

and sediments. Spherical spreading occurs in a perfectly unobstructed (free-field) environment not limited by depth or water surface, resulting in a 6 dB reduction in sound level for each doubling of distance from the source ( $20 \cdot \log(\text{range})$ ). Cylindrical spreading occurs in an environment in which sound propagation is bounded by the water surface and sea bottom, resulting in a reduction of 3 dB in sound level for each doubling of distance from the source ( $10 \cdot \log(\text{range})$ ). As is common practice in coastal waters, here we assume practical spreading loss (4.5 dB reduction in sound level for each doubling of distance). Practical spreading is a compromise that is often used under conditions where water depth increases as the receiver moves away from the shoreline, resulting in an expected propagation environment that would lie between spherical and cylindrical spreading loss conditions.

#### Sound Source Levels

The intensity of pile driving sounds is greatly influenced by factors such as the type of piles, hammers, and the physical environment in which the activity takes place. There are source level measurements available for certain pile types and sizes from the similar environments recorded from underwater pile driving projects in Alaska (*e.g.*, JASCO Reports - Denes *et al.*, 2016 and Austin *et al.*, 2016) that were evaluated and used as proxy sound source levels to determine reasonable sound source levels likely result from the City's pile driving and removal activities (Table 5). Many source levels used were more conservative as the values were from larger pile sizes.

**Table 5--Assumed Sound Source Levels**

Activity	Sound Source Level at 10 meters	Sound Source
Vibratory Pile Driving/Removal		
20-inch fender pile permanent	161.9 SPL	The 20-in fender and 30-inch-diameter source level for vibratory driving are proxy from median measured source levels from pile driving of 30-inch-diameter piles to construct the Ketchikan Ferry Terminal (Denes <i>et al.</i> 2016, Table 72).
30-inch steel pile temporary	161.9 SPL	
30-inch steel pile removal	161.9 SPL	

36-inch steel pile permanent	168.2 SPL	The 36-inch-diameter pile source level is proxy from median measured source levels from pile driving of 48-inch diameter piles for the Port of Anchorage test pile project (Austin <i>et al.</i> 2016, Table 16).
H-pile installation permanent	168 SPL	The H-pile source level is proxy from median measured source levels from vibratory pile driving of H piles for the Port of Anchorage test pile project (Yurk <i>et al.</i> 2015 as cited in Denes <i>et al.</i> 2016, Appendix H Table 2).
Sheet pile installation	160 SPL	The sheet source level is proxy from median measured source levels from vibratory pile driving of 24-inch sheets for Berth 30 at the Port of Oakland, CA (Buehler <i>et al.</i> 2015; Table I.6-2).
Impact Pile Driving		
36-inch steel pile permanent	186.7 SEL/ 198.6 SPL	The 36-inch diameter pile source level is a proxy from median measured source level from impact hammering of 48-inch piles for the Port of Anchorage test pile project (Austin <i>et al.</i> , 2016, Tables 9 and 16).
20-inch fender pile installation permanent	161 SEL/ 174.8 SPL	The 20-inch diameter pile source levels are proxy from median measured source levels from vibratory driving of 24-inch piles for the Kodiak Ferry Terminal project (Denes <i>et al.</i> 2016)
H-pile installation permanent and Sheet pile installation	163 SEL/ 177 SPL	H-Pile and Sheets Impacting source levels are proxy from median measured source levels from pile driving H-piles and sheets for the Port of Anchorage test pile project (Yurk <i>et al.</i> 2015 as cited in Denes <i>et al.</i> 2016, Appendix H Table 1).
DTH Pile Installation		
36-inch steel pile permanent	164 SEL/166 SPL	The DTH sound source proxy of 164 dB SEL is from 42-in piles, Reyff 2020 and Denes <i>et al.</i> 2019; while the 154 dB SEL is based on 24-in piles, Denes <i>et al.</i> 2016.
20-inch fender pile installation temporary	154 SEL/166 SPL	
H-pile installation permanent (20-inch hole)	154 SEL/166 SPL	

## Level A Harassment

When the NMFS Technical Guidance (2016) was published, in recognition of the fact that ensonified area/volume could be more technically challenging to predict because of the duration component in the new thresholds, we developed a User Spreadsheet that includes tools to help predict a simple isopleth that can be used in conjunction with marine mammal density or occurrence to help predict takes. We note that because of some of the assumptions included in the methods used for these tools, we anticipate that isopleths produced are typically going to be overestimates of some degree, which may result in some degree of overestimate of Level A harassment take. However, these tools offer the best way to predict appropriate isopleths when more sophisticated 3D modeling methods are not available, and NMFS continues to develop ways to quantitatively refine these tools, and will qualitatively address the output where appropriate. For stationary sources (such as from impact and vibratory pile driving and DTH), NMFS User

Spreadsheet (2020) predicts the closest distance at which, if a marine mammal remained at that distance the whole duration of the activity, it would not incur PTS. Inputs used in the User Spreadsheet (Tables 6 and 7), and the resulting isopleths are reported below (Table 8).

**Table 6--NMFS Technical Guidance (2020) User Spreadsheet Input to Calculate PTS Isopleths for Vibratory Pile Driving**

USER SPREADSHEET INPUT –Vibratory Pile Driving Spreadsheet Tab A.1 Vibratory Pile Driving Used.						
	30-in piles (temporary install)	30-in piles (temporary removal)	20-in fender piles (permanent)	36-in piles (permanent)	H-piles (permanent)	Sheet piles (permanent)
Source Level (RMS SPL)	161.9	161.9	161.9	168.2	168	160
Weighting Factor Adjustment (kHz)	2.5	2.5	2.5	2.5	2.5	2.5
Number of piles within 24-hr period	4	4	4	4	4	30
Duration to drive a single pile (min)	15	15	15	15	15	15
Propagation (xLogR)	15	15	15	15	15	15
Distance of source level measurement (meters) <sup>+</sup>	10	10	10	10	11	10

**Table 7--NMFS Technical Guidance (2020) User Spreadsheet Input to Calculate PTS Isopleths for Impact Pile Driving**

USER SPREADSHEET INPUT – Impact Pile Driving Spreadsheet Tab E.1 Impact Pile Driving Used.							
	36-in piles (permanent)	36-in pile (DTH)	20-in fender piles (permanent)	20-in fender pile (DTH)	H-pile (permanent)	H-pile (DTH)	Sheet piles (permanent)
Source Level (Single Strike/shot SEL)	186.7	164	161	154	163	154	163
Weighting Factor Adjustment (kHz)	2	2	2	2	2	2	2
Number of strikes per pile	100	-	35	-	35	-	35
Strike rate (avg. strikes per second)	-	15		15		15	
Number of piles per day	2	2	2	2	5	2	5
Propagation (xLogR)	15	15	15	15	15	15	15
Distance of source level measurement (meters) <sup>+</sup>	10	10	10	10	15	10	15

**Table 8--NMFS Technical Guidance (2020) User Spreadsheet Outputs to Calculate Level A Harassment PTS Isopleths**

USER SPREADSHEET OUTPUT		PTS isopleths (meters)				
Activity	Sound Source Level at 10 m	Level A harassment				
		Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid	Otariid
Vibratory Pile Driving/Removal						
20-in steel fender pile installation	161.9 SPL	7.8	0.7	11.6	4.8	0.3
30-in steel pile temporary installation	161.9 SPL	7.8	0.7	11.6	4.8	0.3
30-in steel pile removal	161.9 SPL	7.8	0.7	11.6	4.8	0.3
36-in steel permanent installation	168.2 SPL	20.6	1.8	30.5	12.5	0.9
H-pile installation	168 SPL	22.0	2.0	32.5	13.4	0.9
Sheet pile installation	160 SPL	22.4	2.0	33.2	13.6	1.0
Impact Pile Driving						
36-in steel permanent installation	186.7 SEL/ 198.6 SPL	602.7	21.4	717.9	322.5	23.5
20-in fender pile installation	161 SEL/ 174.8 SPL	5.8	0.2	6.9	3.1	0.21
H-pile installation	163 SEL/ 177 SPL	21.8	0.8	25.9	11.6	0.8
Sheet pile installation	163 SEL/ 177 SPL	21.8	0.8	25.9	11.6	0.8
DTH						
36-in steel permanent installation	164 SEL/ 166 SPL	1,225.6	43.6	1,459.9	655.9	47.8
20-in steel fender pile installation	154 SEL/ 166 SPL	264.1	9.4	314.5	141.3	10.3
H-pile installation	154 SEL/ 166 SPL	264.1	9.4	314.5	141.3	10.3

## Level B Harassment

Utilizing the practical spreading loss model, the City determined underwater noise will fall below the behavioral effects threshold of 120 dB rms for marine mammals at the distances shown in Table 9 for vibratory pile driving/removal, and DTH. With these radial distances, and due to the occurrence of landforms (See Figure 5 and 8 of the IHA Application), the largest Level B harassment zone calculated for vibratory pile driving for 36-in steel piles and H-piles were larger than the 15,700 meters (m) from the source where land masses block sound transmission. For DTH, the largest radial distance was

11,659 m. For calculating the Level B harassment zone for impact driving, the practical spreading loss model was used with a behavioral threshold of 160 dB rms. The maximum radial distance of the Level B harassment zone for impact piling equaled 3,744 m for 36-inch piles m. Table 9 below provides all Level B harassment radial distances (m) during the City's planned activities.

**Table 9--Radial Distances (meters) to Relevant Behavioral Isopleths**

Activity	Received Level at 10 meters	Level B Harassment Zone (m)*
<b>Vibratory Pile Driving/Removal</b>		
20-inch steel fender pile installation	161.9 SPL	6,215 (calculated 6,213)
30-inch steel temporary installation	161.9 SPL	6,215 (calculated 6,213)
30-inch steel removal	161.9 SPL	6,215 (calculated 6,213)
36-inch steel permanent installation	168.2 SPL	15,700 <sup>a</sup> (calculated 16,343)
H-pile installation	168 SPL	15,700 <sup>a</sup> (calculated 17,434)
Sheet pile installation	160 SPL	4,645 (calculated 4,642)
<b>Impact Pile Driving</b>		
20-inch fender pile installation	161 SEL/ 174.8 SPL	100 (calculated 97)
36-inch steel permanent installation	186.7 SEL/ 198.6 SPL	3,745 (calculated 3,744)
H-pile and Sheet pile installation	163 SEL/ 177 SPL	205 (calculated 204)
<b>DTH</b>		
20-inch steel fender pile installation	166 SPL	11,660 (calculated 11,659)
36-inch steel temporary installation	166 SPL	11,660 (calculated 11,659)
H-pile installation	166 SPL	11,660 (calculated 11,659)

\* Numbers rounded up to nearest 5 meters. These specific rounded distances are for monitoring purposes rather than take estimation.

<sup>a</sup> Although the calculated distance to Level B harassment thresholds extends these distances, all Level B harassment zones are truncated at 15,700m from the source where land masses block sound transmission.

#### *Marine Mammal Occurrence and Take Calculation and Estimation*

In this section we provide the information about the presence, density, or group dynamics of marine mammals that will inform the take calculations. Potential exposures to impact pile driving, vibratory pile driving/removal and DTH noises for each acoustic threshold were estimated using group size estimates and local observational data. As previously stated, take by Level B harassment as well as small numbers of take by Level A harassment will be considered for this action. Take by Level B and Level A harassment are calculated differently for some species based on monthly or daily sightings data and average group sizes within the action area using the best available data. Take by Level A harassment is being authorized for three species (Dall's and harbor porpoise and harbor seal) where the Level A harassment isopleths are larger for pile driving of 36-in steel piles and DTH of 36-in piles, and is based on average group size multiplied by the number of days of impact pile driving for 36-in piles and DTH of 36-in piles. Distances to Level A harassment thresholds for other project activities (vibratory pile driving/removal, DTH and impact driving of smaller pile sizes) are considerably smaller compared to impact pile driving of 36-in piles and DTH for 36-in piles, and mitigation is expected to avoid Level A harassment from these other activities.

#### Minke whales

There are no density estimates of minke whales available in the project area. These whales are usually sighted individually or in small groups of two or three, but there are reports of loose aggregations of hundreds of animals (NMFS 2018). One minke whale was sighted each year during the Hoonah cruise ship Berth I project (June 2015-January 2016; BergerABAM 2016) and during the Hoonah Berth II project (June 2019 –October 2019; SolsticeAK 2020). To be conservative based on group size, we predict that three minke whales in a group could be sighted each month over the 4-month project period for a total of 12 minke whale takes authorized by Level B harassment. No take by Level A



harassment is authorized or anticipated to occur due to their rarer occurrence in the project area.

#### Humpback whales

There are no density estimates of humpback whales available in the project area. During the previous Hoonah Berth I project, humpback whales were observed on 84 of the 135 days of monitoring; most often in September and October (BergerABAM 2016). Additionally, during construction of the Hoonah Berth II project in 2019, humpback whales were observed in the action area on 45 of the 51 days of monitoring; most often in July and September. Up to 24 humpback sightings were reported on a single day (July 30, 2019), and a total of 108 observations were recorded in harassment zones during project construction (SolsticeAK 2020).

Based on a group size of eight animals, the general maximum group size observed in Southeast Alaska in all months of the year, NMFS estimates that 8 humpback whales could occur for each day of the project (110 days) for a total of 880 takes by Level B harassment. Under the MMPA, humpback whales are considered a single stock (Central North Pacific); however, we have divided them here to account for DPSs listed under the ESA. Using the stock assessment from Muto *et al.* 2020 for the Central North Pacific stock (10,103 whales) and calculations in Wade *et al.* 2016; 9,487 whales are expected to be from the Hawaii DPS and 606 from the Mexico DPS. Therefore, for purposes of consultation under the ESA, we anticipate that 54 of the total takes would be of individuals from the Mexico DPS ( $880 \times 0.061 = 53.68$  (rounded up to 54)). No take by Level A harassment is authorized or anticipated to occur due to their large size and ability to be visibly detected in the project area if an animal should approach the Level A harassment zone.

#### Gray whales

There are no density estimates of gray whales available in the project area. Gray whales travel alone or in small, unstable groups, although large aggregations may be seen in feeding and breeding grounds (NMFS 2018e). Observations in Glacier Bay and nearby waters recorded two gray whales documented over a 10-year period (Keller *et al.*, 2017). None were observed during Hoonah Berth I or II project monitoring (BergerABAM 2016, SolsticeAK 2020). We estimate a one gray whale x onesighting per month over the 4-month work period for a total of four gray whale takes authorized by Level B harassment. No take by Level A harassment is authorized or anticipated to occur due to their rarer occurrence in the project area, but also their large size and ability to be visibly detected in the project area if an animal should approach the Level A harassment zone.

#### Killer whales

There are no density estimates of killer whales available in the project area. Killer whales occur commonly in the waters of the project area, and could include members of several designated stocks that may occur in the vicinity of the project area. Whales are known to use the Icy Strait corridor to enter and exit inland waters and are observed in every month of the year, with certain pods being observed inside Port Frederick passing directly in front of Hoonah. Group size of resident killer whale pods in the Icy Strait area ranges from 42 to 79 and occur in every month of the year (Dahlheim pers. comm. to NMFS 2015). As determined during a line-transect survey by Dalheim *et al.* (2008), the greatest number of transient killer whale observed occurred in 1993 with 32 animals seen over 2 months for an average of 16 sightings per month. Killer whales were observed infrequently during construction of Hoonah Berth I project. Usually a singular animal was observed, but a group containing eight individuals was seen in the project area on one occasion. A total of 24 animals were observed during in-water work for the Hoonah Bert I project (BergerABAM 2016). During construction of the Hoonah Berth II project, killer whales were observed on 8 days. Usually a single animal or pairs were observed,

but a group containing five individuals was seen in the project area on one occasion. A total of 20 animals were observed during in-water work on Hoonah Berth II project (SolsticeAK 2020). Using the largest group size for resident killer whales as discussed above, NMFS estimates that 79 killer whales (residents and transients) could occur each month during the 4-month project period for a total of 316 takes by Level B harassment. No take by Level A harassment is authorized or anticipated to occur to the ability to visibly detect these large whales and in most cases the small size of the Level A harassment zones.

#### Pacific white-sided dolphin

There are no density estimates of Pacific white-sided dolphins available in the project area. Pacific white-sided dolphins have been observed in Alaska waters in groups ranging from 20 to 164 animals, with the sighting of 164 animals occurring in Southeast Alaska near Dixon Entrance (Muto *et al.*, 2018). There were no Pacific white-sided dolphins observed during the 135-day monitoring period during the Hoonah Berth I project; however, a pod of two Pacific white-sided dolphins was observed during construction of the Hoonah Bert II project (SolsticeAK 2020). Using the largest group size for Pacific white-sided dolphins as discussed above, NMFS estimates 164 Pacific white-sided dolphins may be seen every other month over the 4-month project period for a total of 328 takes by Level B harassment. No take by Level A harassment is authorized or anticipated to occur as the largest Level A harassment isopleths calculated were 43.6 m during DTH of 36-in piles and 21.4 m during impact pile driving of 36-in piles. The remaining isopleths were all under 10 m.

#### Dall's porpoise

Little information is available on the abundance of Dall's porpoise in the inland waters of Southeast Alaska. Dall's porpoise are most abundant in spring, observed with lower numbers in the summer, and lowest numbers in fall. Jefferson *et al.*, 2019 presents

abundance estimates for Dall's porpoise in these waters and found the abundance (N) in summer (N = 2,680, CV = 19.6 percent), and lowest in fall (N = 1,637, CV = 23.3 percent). Dall's porpoise are common in Icy Strait and sporadic with very low densities in Port Frederick (Jefferson *et al.*, 2019). Dahlheim *et al.* (2008) observed 346 Dall's porpoise in Southeast Alaska (inclusive of Icy Strait) during the summer (June/July) of 2007 for an average of 173 animals per month as part of a 17-year study period. During the previous Hoonah Berth I project, only two Dall's porpoise were observed, and were transiting within the waters of Port Frederick in the vicinity of Halibut Island. A total of 21 Dall's porpoises were observed on eight days during the Hoonah Berth II project in group sizes of 2 to 12 porpoise (SolsticeAK 2020). Therefore, NMFS' estimates 12 Dall's porpoise a week may be seen during the 4-month project period for a total of 192 takes by Level B harassment. Because the calculated Level A harassment isopleths are larger for high-frequency cetaceans during DTH of 36-inch piles (1,459.9 m) and 36-in impact pile driving (717.9 m) and the applicant would have a reduced shutdown zone at 200 m, NMFS predicts that some take by Level A harassment may occur. It is estimated that two Dall's porpoise could be taken by Level A harassment every 5 days over a 20-day period (15 days of DTH of 36-in piles + 5 days of 36-in impact pile driving) for a total of 8 takes by Level A harassment.

#### Harbor porpoise

Dahlheim *et al.* (2015) observed 332 resident harbor porpoises occur in the Icy Strait area, and harbor porpoise are known to use the Port Frederick area as part of their core range. During the Hoonah Berth I project monitoring, a total of 32 harbor porpoise were observed over 19 days during the 4-month project. The harbor porpoises were observed in small groups with the largest group size reported was four individuals and most group sizes consisting of three or fewer animals. During the test pile program conducted at the Berth II project site in May 2018, eight harbor porpoises were observed

over a 7-hour period (SolsticeAK 2018). During the Hoonah Berth II project, 120 harbor porpoises were observed June through October. The largest group size reported was eight individuals, and most group sizes consisting of four or fewer animals (SolsticeAK 2020). NMFS estimates that four harbor porpoises per day could occur in the project area over the 4-month project period (110 days) for a total of 440 takes by Level B harassment. Because the calculated Level A harassment isopleths are larger for high-frequency cetaceans during DTH of 36-inch piles (1,459.9 m) and 36-in impact pile driving (717.9 m) and the applicant would have a reduced shutdown zone at 200 m, NMFS predicts that some take by Level A harassment may occur. It is estimated that four harbor porpoise could be taken by Level A harassment every 5 days over a 20-day period (15 days of DTH of 36-in piles + 5 days of 36-in impact pile driving) for a total of 16 takes by Level A harassment.

#### Harbor Seal

There are no density estimates of harbor seals available in the project area. Keller *et al.* (2017) observed an average of 26 harbor seal sightings each month between June and August of 2014 in Glacier Bay and Icy Strait. During the monitoring of the Hoonah Berth I project, harbor seals typically occur in groups of one to four animals and a total of 63 seals were observed during 19 days of the 135-day monitoring period. In 2019, a total of 33 harbor seals were seen during the Hoonah Berth II project. Only solo individuals were sighted during that time (SolsticeAK 2020). NMFS estimates that three harbor seals per group, and two groups a day, could occur in the project area each month during the 4-month project period (110 days) for a total of 660 takes by Level B harassment. Because the calculated Level A harassment isopleths are larger for phocids during DTH of 36-inch piles (655.9 m) and 36-in impact pile driving (322.5 m), compared with the shutdown zone at 200 m, NMFS predicts that some take by Level A harassment may occur. It is estimated that one group of three harbor seals a day could be taken by Level A

harassment over a 20-day period (15 days of DTH of 36-in piles + 5 days of 36-in impact pile driving) for a total of 60 takes by Level A harassment.

#### Steller sea lion

There are no density estimates of Steller sea lions available in the project area. NMFS expects that Steller sea lion presence in the action area will vary due to prey resources and the spatial distribution of breeding versus non-breeding season. In April and May, Steller sea lions are likely feeding on herring spawn in the action area. Then, most Steller sea lions likely move to the rookeries along the outside coast (away from the action area) during breeding season, and would be in the action area in greater numbers in August and later months (J. Womble, NPS, pers. comm. to NMFS AK Regional Office, March 2019). However, Steller sea lions are also opportunistic predators and their presence can be hard to predict.

Steller sea lions typically occur in groups of 1-10 animals, but may congregate in larger groups near rookeries and haulouts. The previous Hoonah Berth I project observed a total of 180 Steller sea lion sightings over 135 days in 2015, amounting to an average of 1.3 sightings per day (BergerABAM 2016). During a test pile program performed at the project location by the Hoonah Cruise Ship Dock Company in May 2018, a total of 15 Steller sea lions were seen over the course of 7 hours in one day (SolsticeAK 2018). During construction of the Hoonah Berth II project, a total of 197 Steller sea lion sightings over 42 days were reported, amounting to an average of 4.6 sightings per day (SolsticeAK 2020). NMFS estimates that five Steller sea lions per day could occur in the project area each month during the 4-month project period (110 days) for a total of 550 takes by Level B harassment. NMFS expects that the percentage of Steller sea lions which may be found in the action area from the WDPS is estimated at 1.4 percent (Hastings *et al.* 2020). Therefore, NMFS expects that 8 individual WDPS Steller sea lions may be exposed to Level B harassment ( $550 \times 0.014 = 7.7$  (rounded up to 8)). There is

some evidence of Steller sea lions remaining in areas where there is a reliable food source. Should a Steller sea lion go undetected by a Protected Species Observer (PSO) and later observed within the Level A harassment zone, the City proposes mitigation measures (*e.g.*, shutdowns), and it would be unlikely that an animal would accumulate enough exposure for PTS to occur. Therefore, no take by Level A harassment is authorized or anticipated to occur as the largest Level A isopleths calculated were 47.8 m during DTH of 36-in piles and 23.5 m during impact pile driving of 36-in piles. The remaining isopleths were approximately 10 m or less.

Table 10 below summarizes the authorized take for all the species described above as a percentage of stock abundance.

**Table 10--Take Estimates as a Percentage of Stock Abundance**

Species	Stock (N <sub>EST</sub> )	Level A Harassment	Level B Harassment	Percent of Stock
Minke Whale	N/A	0	12	N/A
Humpback Whale	Central North Pacific	0	880	8.7
Gray Whale	Eastern North Pacific (27,000)	0	4	Less than 1 percent
Killer Whale	Alaska Resident (2,347) Northern Resident (302) West Coast Transient (243)	0	256 33 27 (Total 316)	10.9 <sup>a</sup> 10.9 <sup>a</sup> 11.1 <sup>a</sup>
Pacific White-Sided Dolphin	North Pacific (26,880)	0	328	Less than 1 percent
Dall's Porpoise	Alaska (83,400) <sup>b</sup>	8	144	Less than 1 percent
Harbor Porpoise	NA	16	440	NA
Harbor Seal	Glacier Bay/Icy Strait (7,455)	60	660	8.9
Steller Sea Lion	Eastern U.S. (43,201) Western U.S. (53,624)	0	542 8 (Total 550)	1.26  Less than 1 percent

<sup>a</sup> Take estimates are weighted based on calculated percentages of population for each distinct stock, assuming animals present would follow same probability of presence in project area.

<sup>b</sup> Jefferson *et al.* 2019 presents the first abundance estimates for Dall's porpoise in the waters of Southeast Alaska with highest abundance recorded in spring (N=5,381, CV= 25.4 percent), lower numbers in summer (N=2,680, CV=19.6 percent), and lowest in fall (N=1,637, CV=23.3 percent). However, NMFS currently recognizes a single stock of Dall's porpoise in Alaskan waters and an estimate of 83,400 Dall's porpoises is used by NMFS for the entire stock (Muto *et al.*, 2020).

## **Mitigation**

In order to issue an IHA under Section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to such activity, and other means of effecting the least practicable impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stock for taking for certain subsistence uses (latter not applicable for this action). NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting such activity or other means of effecting the least practicable adverse impact upon the affected species or stocks and their habitat (50 CFR 216.104(a)(11)).

In evaluating how mitigation may or may not be appropriate to ensure the least practicable adverse impact on species or stocks and their habitat, as well as subsistence uses where applicable, we carefully consider two primary factors:

- 1) The manner in which, and the degree to which, the successful implementation of the measure(s) is expected to reduce impacts to marine mammals, marine mammal species or stocks, and their habitat. This considers the nature of the potential adverse impact being mitigated (likelihood, scope, range). It further considers the likelihood that the measure will be effective if implemented (probability of accomplishing the mitigating result if implemented as planned) the likelihood of effective implementation (probability implemented as planned); and



2) The practicability of the measures for applicant implementation, which may consider such things as cost, impact on operations, and, in the case of a military readiness activity, personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity.

### *General*

The City will follow mitigation procedures as outlined in their Marine Mammal Monitoring Plan and as described below. In general, if poor environmental conditions restrict visibility full visibility of the shutdown zone, pile driving installation and removal as well as DTH will be delayed.

### *Training*

The City must ensure that construction supervisors and crews, the monitoring team, and relevant City staff are trained prior to the start of construction activity subject to this IHA, so that responsibilities, communication procedures, monitoring protocols, and operational procedures are clearly understood. New personnel joining during the project must be trained prior to commencing work

### *Avoiding Direct Physical Interaction*

The City must avoid direct physical interaction with marine mammals during construction activity. If a marine mammal comes within 10 m of such activity, operations must cease and vessels must reduce speed to the minimum level required to maintain steerage and safe working conditions, as necessary to avoid direct physical interaction.

### *Shutdown Zones*

For all pile driving/removal and DTH activities, the City will establish a shutdown zone for a marine mammal species that is greater than its corresponding Level A harassment zone; except for a few circumstances during impact pile driving and DTH, where the shutdown zone is smaller (reduced to 200 m) than the Level A harassment zone for high frequency cetaceans and phocids due to the practicability of shutdowns on

the applicant and to the potential difficulty of observing these animals in the larger Level A harassment zones. The calculated PTS isopleths were rounded up to a whole number to determine the actual shutdown zones that the applicant will operate under (Table 11). The purpose of a shutdown zone is generally to define an area within which shutdown of the activity would occur upon sighting of a marine mammal (or in anticipation of an animal entering the defined area).

**Table 11--Pile Driving Shutdown Zones during Project Activities**

Pile size, type, and method	Shutdown Zones				
	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid	Otariid
Vibratory Pile Driving/Removal					
20-in steel fender pile installation	10	10	15	10	10
30-in steel pile temporary installation	10	10	15	10	10
30-in steel pile removal	10	10	15	10	10
36-in steel permanent installation	25	10	35	15	10
H-pile installation	35	10	35	15	10
Sheet pile installation	25	10	35	15	10
Impact Pile Driving					
36-in steel permanent installation	625	25	200*	200*	25
20-in fender pile installation	10	10	10	10	10
H-pile installation	25	10	30	15	10
Sheet pile installation	25	10	30	15	10
DTH					
36-in steel permanent installation	1,230	45	200*	200*	50
20-in steel fender pile installation	265	10	200*	145	15
H-pile installation	265	10	200*	145	15

\*Due to practicability of the applicant to shutdown and the difficulty of observing some species and low occurrence of some species in the project area, such as high frequency cetaceans or pinnipeds out to this distance, the shutdown zones were reduced and Level A harassment takes were requested during DTH and for impact pile driving of 36-in piles.

*Soft Start*

The City must use soft start techniques when impact pile driving. Soft start requires contractors to provide an initial set of three strikes from the hammer at reduced energy, followed by a 30-second waiting period. Then two subsequent reduced-energy strike sets would occur. A soft start must be implemented at the start of each day's impact pile driving and at any time following cessation of impact pile driving for a period of 30 minutes or longer. Soft start is not required during vibratory pile driving and removal activities.

### *Vessels*

Vessels will adhere to the Alaska Humpback Whale Approach Regulations when transiting for project activities (see 50 CFR §§ 216.18, 223.214, and 224.103(b)). These regulations require that all vessels:

- Not approach within 91.44 m (100 yards (yd)) of a humpback whale, or cause a vessel or other object to approach within 91.44 m (100 yd) of a humpback whale;
- Not place vessel in the path of oncoming humpback whales causing them to surface within 91.44 m (100 yd) of vessel;
- Not disrupt the normal behavior or prior activity of a whale; and
- Operate at a slow, safe speed when near a humpback whale (safe speed is defined in regulation (see 33 CFR § 83.06)).

Based on our evaluation of the applicant's planned measures, NMFS has determined that the planned mitigation measures provide the means of effecting the least practicable impact on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

### **Monitoring and Reporting**

In order to issue an IHA for an activity, Section 101(a)(5)(D) of the MMPA states that NMFS must set forth, requirements pertaining to the monitoring and reporting of such taking. The MMPA implementing regulations at 50 CFR 216.104 (a)(13) indicate

that requests for authorizations must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present in the planned action area. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

Monitoring and reporting requirements prescribed by NMFS should contribute to improved understanding of one or more of the following:

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (*e.g.*, presence, abundance, distribution, density).
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) action or environment (*e.g.*, source characterization, propagation, ambient noise); (2) affected species (*e.g.*, life history, dive patterns); (3) co-occurrence of marine mammal species with the action; or (4) biological or behavioral context of exposure (*e.g.*, age, calving or feeding areas).
- Individual marine mammal responses (behavioral or physiological) to acoustic stressors (acute, chronic, or cumulative), other stressors, or cumulative impacts from multiple stressors.
- How anticipated responses to stressors impact either: (1) long-term fitness and survival of individual marine mammals; or (2) populations, species, or stocks.
- Effects on marine mammal habitat (*e.g.*, marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat).
- Mitigation and monitoring effectiveness.

### *Monitoring Zones*

The City will establish and observe monitoring zones for Level B harassment as presented in Table 9. The monitoring zones for this project are areas where SPLs are

equal to or exceed 120 dB rms (for vibratory pile driving/removal and DTH) and 160 dB rms (for impact pile driving). These zones provide utility for monitoring conducted for mitigation purposes (*i.e.*, shutdown zone monitoring) by establishing monitoring protocols for areas adjacent to the shutdown zones. Monitoring of the Level B harassment zones enables observers to be aware of and communicate the presence of marine mammals in the project area, but outside the shutdown zone, and thus prepare for potential shutdowns of activity.

#### *Pre-Start Clearance Monitoring*

Pre-start clearance monitoring must be conducted during periods of visibility sufficient for the lead PSO to determine the shutdown zones clear of marine mammals. Pile driving and DTH may commence when the determination is made.

#### *Visual Monitoring*

Monitoring must take place from 30 minutes (min) prior to initiation of pile driving and DTH activity (*i.e.*, pre-start clearance monitoring) through 30 min post-completion of pile driving and DTH activity. If a marine mammal is observed entering or within the shutdown zones, pile driving and DTH activity must be delayed or halted. If pile driving or DTH is delayed or halted due to the presence of a marine mammal, the activity may not commence or resume until either the animal has voluntarily exited and been visually confirmed beyond the shutdown zone or 15 min have passed without re-detection of the animal. Pile driving and DTH activity must be halted upon observation of either a species for which incidental take is not authorized or a species for which incidental take has been authorized but the authorized number of takes has been met, entering or within the harassment zone.

#### *PSO Monitoring Locations and Requirements*

The City will establish monitoring locations as described in the Marine Mammal Monitoring Plan. The City will monitor the project area to the extent possible based on

the required number of PSOs, required monitoring locations, and environmental conditions. Monitoring will be conducted by PSOs from on land and from a vessel. For all pile driving and DTH activities, a minimum of one observer must be assigned to each active pile driving and DTH location to monitor the shutdown zones. Three PSOs must be onsite during all in-water activities as follows: PSO 1 stationed at the pile site on the existing City Dock, PSO 2 stationed on Halibut Island facing south and PSO 3 stationed on a vessel running a transect through southern portion of the project area in Port Frederick. These observers must record all observations of marine mammals, regardless of distance from the pile being driven or during DTH.

In addition, PSOs will work in shifts lasting no longer than 4 hrs with at least a 1-hr break between shifts, and will not perform duties as a PSO for more than 12 hrs in a 24-hr period (to reduce PSO fatigue).

Monitoring of pile driving will be conducted by qualified, NMFS-approved PSOs. The City shall adhere to the following conditions when selecting PSOs:

- PSOs must be independent (*i.e.*, not construction personnel) and have no other assigned tasks during monitoring periods.
- At least one PSO must have prior experience performing the duties of a PSO during construction activities pursuant to a NMFS-issued incidental take authorization.
- Other PSOs may substitute other relevant experience, education (degree in biological science or related field), or training.
- Where a team of three PSOs are required, a lead observer or monitoring coordinator shall be designated. The lead observer must have prior experience performing the duties of a PSO during construction activity pursuant to a NMFS-issued incidental take authorization.

- PSOs must be approved by NMFS prior to beginning any activity subject to this IHA.

The City will ensure that the PSOs have the following additional qualifications:

- Visual acuity in both eyes (correction is permissible) sufficient for discernment of moving targets at the water's surface with ability to estimate target size and distance; use of binoculars may be necessary to correctly identify the target;
- Experience and ability to conduct field observations and collect data according to assigned protocols;
- Experience or training in the field identification of marine mammals, including the identification of behaviors;
- Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations;
- Writing skills sufficient to prepare a report of observations including but not limited to the number and species of marine mammals observed; dates and times when in-water construction activities were conducted; dates, times, and reason for implementation of mitigation (or why mitigation was not implemented when required); and marine mammal behavior;
- Ability to communicate orally, by radio or in person, with project personnel to provide real-time information on marine mammals observed in the area as necessary; and
- Sufficient training, orientation, or experience with the construction operations to provide for personal safety during observations.

#### *Notification of intent to commence construction*

The City will inform NMFS OPR and the NMFS Alaska Region Protected Resources Division one week prior to commencing construction activities.

#### *Interim monthly reports*

During construction, the City will submit brief, monthly reports to the NMFS Alaska Region Protected Resources Division that summarize PSO observations and recorded takes. Monthly reporting will allow NMFS to track the amount of take (including any extrapolated takes), to allow reinitiation of consultation in a timely manner, if necessary. The monthly reports will be submitted by email to *akr.section7@noaa.gov*. The reporting period for each monthly PSO report will be the entire calendar month, and reports will be submitted by close of business on the 10th day of the month following the end of the reporting period.

#### *Final report*

The City will submit a draft report on all monitoring conducted under this IHA within 90 calendar days of the completion of monitoring or 60 calendar days prior to the requested issuance of any subsequent IHA for construction activity at the same location, whichever comes first. A final report must be prepared and submitted within 30 days following resolution of any NMFS comments on the draft report. If no comments are received from NMFS within 30 days of receipt of the draft report, the report shall be considered final. All draft and final marine mammal monitoring reports must be submitted to *PR.ITP.MonitoringReports@noaa.gov* and *ITP.Egger@noaa.gov*. The report must contain the informational elements described in the Marine Mammal Monitoring Plan and, at minimum, must include:

- Dates and times (begin and end) of all marine mammal monitoring;
- Construction activities occurring during each daily observation period, including:
  - (i) How many and what type of piles were driven and by what method (*e.g.*, impact, vibratory, DTH);
  - (ii) Total duration of driving time for each pile (vibratory driving) and number of strikes for each pile (impact driving); and



(iii) For DTH, duration of operation for both impulsive and non-pulse components.

- PSO locations during marine mammal monitoring;
- (Environmental conditions during monitoring periods (at beginning and end of PSO shift and whenever conditions change significantly), including Beaufort sea state and any other relevant weather conditions including cloud cover, fog, sun glare, and overall visibility to the horizon, and estimated observable distance;
- Upon observation of a marine mammal, the following information:
  - (i) PSO who sighted the animal and PSO location and activity at time of sighting;
  - (ii) Time of sighting;
  - (iii) Identification of the animal (*e.g.*, genus/species, lowest possible taxonomic level, or unidentified), PSO confidence in identification, and the composition of the group if there is a mix of species;
  - (iv) Distance and bearing of each marine mammal observed to the pile being driven for each sighting (if pile driving and DTH was occurring at time of sighting);
  - (v) Estimated number of animals (min/max/best);
  - (vi) Estimated number of animals by cohort (adults, juveniles, neonates, group composition etc.; Animal's closest point of approach and estimated time spent within the harassment zone.
  - (vii) Description of any marine mammal behavioral observations (*e.g.*, observed behaviors such as feeding or traveling), including an assessment of behavioral responses to the activity (*e.g.*, no response or changes in behavioral state such as ceasing feeding, changing direction, flushing, or breaching);

- Detailed information about implementation of any mitigation (*e.g.*, shutdowns and delays), a description of specific actions that ensued, and resulting changes in behavior of the animal, if any; and
- All PSO datasheets and/or raw sightings data.

#### *Reporting of injured or dead marine mammals*

In the event that personnel involved in the construction activities discover an injured or dead marine mammal, the City will report the incident to the Office of Protected Resources (*PR.ITP.MonitoringReports@noaa.gov*), NMFS (301-427-8401) and to the Alaska regional stranding network (877-925-7773) as soon as feasible. If the death or injury was clearly caused by the specified activity, the City will immediately cease the specified activities until NMFS OPR is able to review the circumstances of the incident and determine what, if any, additional measures are appropriate to ensure compliance with the terms of this IHA. The City will not resume their activities until notified by NMFS. The report must include the following information:

- Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable);
- Species identification (if known) or description of the animal(s) involved;
- Condition of the animal(s) (including carcass condition if the animal is dead);
- Observed behaviors of the animal(s), if alive;
- If available, photographs or video footage of the animal(s); and
- General circumstances under which the animal was discovered.

#### **Negligible Impact Analysis and Determination**

NMFS has defined negligible impact as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival (50

CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.*, population-level effects). An estimate of the number of takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be “taken” through harassment, NMFS considers other factors, such as the likely nature of any responses (*e.g.*, intensity, duration), the context of any responses (*e.g.*, critical reproductive time or location, migration), as well as effects on habitat, and the likely effectiveness of the mitigation. We also assess the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS’s implementing regulations (54 FR 40338; September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the environmental baseline (*e.g.*, as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels).

As stated in the mitigation section, shutdown zones that are larger than the Level A harassment zones will be implemented in the majority of construction days, which, in combination with the fact that the zones are so small to begin with, is expected to avoid the likelihood of Level A harassment for six of the nine species. For the other three species (harbor seals, Dall’s and harbor porpoises), a small amount of Level A harassment has been conservatively authorized because the Level A harassment zones are larger than the planned shutdown zones during impact pile driving of 36-in piles and during DTH. However, we expect, given the nature of the activities and sound source and the unlikelihood that animals would stay in the vicinity of the pile-driving for long, any PTS incurred would be expected to be of a low degree and unlikely to have any effects on individual fitness.

Exposures to elevated sound levels produced during pile driving activities may cause behavioral responses by an animal, but they are expected to be mild and temporary. Effects on individuals that are taken by Level B harassment, on the basis of reports in the literature as well as monitoring from other similar activities, will likely be limited to reactions such as increased swimming speeds, increased surfacing time, or decreased foraging (if such activity were occurring) (*e.g.*, Thorson and Reyff, 2006; Lerma, 2014). Most likely, individuals will simply move away from the sound source and be temporarily displaced from the areas of pile driving, although even this reaction has been observed primarily only in association with impact pile driving. These reactions and behavioral changes are expected to subside quickly when the exposures cease.

To minimize noise during pile driving, the City will use pile caps (pile softening material). Much of the noise generated during pile installation comes from contact between the pile being driven and the steel template used to hold the pile in place. The contractor will use high-density polyethylene or ultra-high-molecular-weight polyethylene softening material on all templates to eliminate steel on steel noise generation.

During all impact driving, implementation of soft start procedures and monitoring of established shutdown zones will be required, significantly reducing the possibility of injury. Given sufficient notice through use of soft start (for impact driving), marine mammals are expected to move away from an irritating sound source prior to it becoming potentially injurious. In addition, PSOs will be stationed within the action area whenever pile driving/removal and DTH activities are underway. Depending on the activity, the City will employ the use of three PSOs to ensure all monitoring and shutdown zones are properly observed.

The HMIC Cargo Dock would likely not impact any marine mammal habitat since its location is within an area that is currently used by large shipping vessels and in

between two existing, heavily-traveled docks, and within an active marine commercial and tourist area. There are no known pinniped haulouts or other biologically important areas for marine mammals near the action area. In addition, impacts to marine mammal prey species are expected to be minor and temporary. Overall, the area impacted by the project is very small compared to the available habitat around Hoonah. The most likely impact to prey will be temporary behavioral avoidance of the immediate area. During pile driving/removal and DTH activities, it is expected that fish and marine mammals would temporarily move to nearby locations and return to the area following cessation of in-water construction activities. Therefore, indirect effects on marine mammal prey during the construction are not expected to be substantial.

In summary and as described above, the following factors primarily support our determination that the impacts resulting from this activity are not expected to adversely affect the species or stock through effects on annual rates of recruitment or survival:

- No mortality is anticipated or authorized;
- Minimal impacts to marine mammal habitat/prey are expected;
- The action area is located and within an active marine commercial and tourist area;
- There are no rookeries, or other known areas or features of special significance for foraging or reproduction in the project area;
- Anticipated incidents of Level B harassment consist of, at worst, temporary modifications in behavior; and
- The required mitigation measures (*i.e.* shutdown zones) are expected to be effective in reducing the effects of the specified activity.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the monitoring and mitigation measures, NMFS finds that the total

marine mammal take from the planned activity will have a negligible impact on all affected marine mammal species or stocks.

### **Small Numbers**

As noted above, only small numbers of incidental take may be authorized under Section 101(a)(5)(A) and (D) of the MMPA for specified activities other than military readiness activities. The MMPA does not define small numbers and so, in practice, where estimated numbers are available, NMFS compares the number of individuals taken to the most appropriate estimation of abundance of the relevant species or stock in our determination of whether an authorization is limited to small numbers of marine mammals. When the predicted number of individuals to be taken is fewer than one third of the species or stock abundance, the take is considered to be of small numbers. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

Seven of the nine marine mammal stocks authorized for take are approximately 11 percent or less of the stock abundance. There are no official stock abundances for harbor porpoise and minke whales; however, as discussed in greater detail in the **Description of Marine Mammals in the Area of Specified Activities**, we believe for the abundance information that is available, the estimated takes are likely small percentages of the stock abundance. For harbor porpoise, the abundance for the Southeast Alaska stock is likely more represented by the aerial surveys that were conducted as these surveys had better coverage and were corrected for observer bias. Based on this data, the estimated take could potentially be approximately 4 percent of the stock abundance. However, this is unlikely and the percentage of the stock taken is likely lower as the authorized take estimates are conservative and the project occurs in a small footprint compared to the available habitat in Southeast Alaska. For minke whales, in the northern part of their range they are believed to be migratory and so few minke whales have been

seen during three offshore Gulf of Alaska surveys that a population estimate could not be determined. With only twelve authorized takes for this species, the percentage of take in relation to the stock abundance is likely to be very small.

Based on the analysis contained herein of the planned activity (including the mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks.

### **Unmitigable Adverse Impact Analysis and Determination**

In order to issue an IHA, NMFS must find that the specified activity will not have an “unmitigable adverse impact” on the subsistence uses of the affected marine mammal species or stocks by Alaskan Natives. NMFS has defined “unmitigable adverse impact” in 50 CFR 216.103 as an impact resulting from the specified activity: (1) That is likely to reduce the availability of the species to a level insufficient for a harvest to meet subsistence needs by: (i) Causing the marine mammals to abandon or avoid hunting areas; (ii) Directly displacing subsistence users; or (iii) Placing physical barriers between the marine mammals and the subsistence hunters; and (2) That cannot be sufficiently mitigated by other measures to increase the availability of marine mammals to allow subsistence needs to be met.

In September 2020, the Indigenous People’s Council for Marine Mammals (IPCoMM), the Alaska Sea Otter and Steller Sea Lion Commission, Huna Totem Corporation, and the Hoonah Indian Association (HIA) were contacted to determine potential project impacts on local subsistence activities. No comments were received from IPCoMM or the Alaska Sea Otter and Steller Sea Lion Commission. On September 14, 2020, Huna Totem Corporation expressed support for the project and indicated that they do not anticipate any marine mammal or subsistence.

The planned project is not likely to adversely impact the availability of any marine mammal species or stocks that are commonly used for subsistence purposes or to impact subsistence harvest of marine mammals in the region because construction activities are localized and temporary; mitigation measures will be implemented to minimize disturbance of marine mammals in the project area; and the project will not result in significant changes to availability of subsistence resources.

Based on the description of the specified activity, the measures described to minimize adverse effects on the availability of marine mammals for subsistence purposes, and the mitigation and monitoring measures, NMFS has determined that there will not be an unmitigable adverse impact on subsistence uses from the City's planned activities.

Therefore, we believe there are no relevant subsistence uses of the affected marine mammal stocks or species implicated by this action. NMFS has determined that the total taking of affected species or stocks would not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

#### **Endangered Species Act (ESA)**

Section 7(a)(2) of the Endangered Species Act of 1973 (ESA: 16 U.S.C. 1531 *et seq.*) requires that each Federal agency insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. To ensure ESA compliance for the issuance of IHAs, NMFS consults internally whenever we propose to authorize take for endangered or threatened species, in this case with the Alaska Regional Office (AKRO).

NMFS is authorizing take of Mexico DPS humpback whales, and Western DPS Steller sea lions which are listed under the ESA. The Permit and Conservation Division completed a Section 7 consultation with the AKRO for the issuance of this IHA. The



AKRO's biological opinion states that the action is not likely to jeopardize the continued existence of Western DPS Steller sea lions or Mexico DPS humpback whales.

**Authorization**

As a result of these determinations, NMFS authorizes an IHA to the City for conducting for the planned pile driving and removal activities as well as DTH during construction of the HMIC Cargo Dock Project, Hoonah Alaska for one year, beginning May 2021, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated.

Dated: May 17, 2021.

**Catherine Marzin,**

*Acting Director, Office of Protected Resources,*

*National Marine Fisheries Service.*